



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,563	07/26/2002	Athanasios Petropoulos	00367000384	3227

23418 7590 07/19/2004

VEDDER PRICE KAUFMAN & KAMMHOLZ
222 N. LASALLE STREET
CHICAGO, IL 60601

EXAMINER

VANNUCCI, JAMES

ART UNIT PAPER NUMBER

2821

DATE MAILED: 07/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/064,563

Applicant(s)

PETROPOULOS, ATHANASIOS

Examiner

Jim Vannucci

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchs et al.(6,329,954).

Claim 1, figures 22-25 disclose a quadrifilar radiator(210), a pcb(col. 4, lines 14-19), and a monopole array(220). A pcb is a dielectric with a ground plane on one side and circuitry on the opposing side. Fuchs discloses devices on one surface of the pcb(col. 4, lines 15-19).

Figures 2 and 5 disclose the pcb(132) with the side facing the antennas not having any devices. This would imply that the devices are on the side facing away from the antennas and that the side towards the antennas does not have devices because it is the ground plane side of the pcb.

It would be obvious to one of ordinary skill in the art to position the ground plane of the pcb towards the antenna elements to shield the antennas from the circuitry as can be implied from the figures and specification of Fuchs.

Fuchs discloses each of the monopoles being connected(col. 5, lines 27-29). Since the monopoles are mounted on a pcb, the ground plane, conductive strip on the opposing side, and the dielectric of the pcb would form a micro-strip.

Claim 4, the monopole array elements(220) are positioned and connected(abstract)as recited.

3. Claims 2-3 and 6-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchs in view of Leisten et al.(6,300,917).

Claims 2, 11-12, 16 and 20, figures 22-25 of Fuchs disclose a cylindrical dielectric and coaxial cables, but not a balun. Figure 5 of Leisten discloses a balun(40) which is positioned between a lower part of the coaxial feed(34) and the helical elements(30A-30D) for an improved antenna(col. 3) including four modes of resonance(lines 7-8).

Claims 3, 13 and 20, the quadrifilar element disclosed in Fuchs is for circular polarization(abstract).

Claim 6, figures 22-23 of Fuchs discloses two coaxial cables each connected as recited.

Claims 7-8 and 16-17, Fuchs does not disclose cross V dipole elements. Figure 5 of Leisten discloses V elements(30AR-30DR) and a coaxial cable(34) that would extend through the pcb of Fuchs if the Leisten helical element were used in place of the helical element disclosed in Fuchs.

Claims 9-10, 14-15 and 18-19, see above references to Fuchs.

It would have been obvious to one of ordinary skill in the art at the time of the

invention to use the balun and V dipole elements as disclosed in Leisten with the antenna disclosed in Fuchs for an improved antenna as disclosed in Leisten.

Response to Arguments

4. Applicant's arguments filed June 10, 2004 have been fully considered but they are not persuasive.

Fuchs is not silent regarding the structure of the pcb.

Fuchs discloses a pcb that is well known in the art, this would include a standard pcb with one surface being a ground plane.

Fuchs discloses electrical devices mounted on the pcb(col. 4) and discloses in figure 5 a pcb(132) without devices mounted on a side facing the antenna elements. This implies that the devices are on a side opposite to the antenna elements and that the side next to the antenna elements is a ground plane since no devices are depicted in the figure on the side next to the antenna elements.

Figure 2 of Fuchs also discloses the devices(172) on the side of the pcb opposite to the antenna elements(110 & 120) and does not disclose any devices on the same side of the pcb as the antenna elements. This implies the upper side of the pcb is a ground plane.

Applicant argues that the disclosed pcb may not be a standard pcb, but instead may be a pcb with devices on both sides of the substrate instead of a ground plane on one side. This argument is inconsistent with the above referenced pcb's of figures 2 & 5 that clearly disclose devices only on a single side of the pcb. Also, Fuchs' reference to a

pcb that is well known to those skilled in the art would specifically include a pcb that is considered the standard in the art. The standard pcb in the art includes a ground plane.

Fuchs discloses connecting the monopole elements as referenced above.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Jim Vannucci whose phone number is (571) 272-1820.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center whose telephone number is (703) 308-0956.

Art Unit: 2821

Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 872-9306.



James Vannucci